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One day the elder said to the younger he should give the girl up, "because I am the elder". The younger brother said he would not give her up. Although the other was the elder he would not give her up. But the elder brother left the matter then, till night fell, then he went to the hut where the younger brother slept and killed him with a sword. When the girl saw this she cried for twenty days and her heart ached. The people who heard this said, what he had done was bad, God will revenge it. When the girl had finished crying she went to another place, nobody saw her again.

(Y 13) Long ago, there lived a man who had a wife. They had two children, sons. When they grew up they saw a girl who was very beautiful. They loved her, but the girl loved the younger more than the elder. When the elder brother realised this he said to the younger: "You must give up the girl, for I am your elder brother and I ought to marry her." When he said this the younger refused and they quarrelled so much that the elder brother took his sword, went to the younger, attacked him with his sword and killed him. When all the people heard this they said: "An evil deed has been done by the elder brother." They said: "Nobody should touch him, for God will judge." The girl cried for twenty days. Her sadness was so great that she left the town, and nobody saw her again.

V. The picture experiments

Y N 125

I showed six pictures of different topics which varied in complication and distinctness. Each picture was exposed for about 10–15 sec. The experimental subjects were asked first to write down (in vernacular) what they had seen, after every picture. After a week's time they were asked to relate what they remembered, and this was written down by the leader of the experiment. The photographs represented:

(1) Two leopards in the bush.

(2) A black horse with a native groom in European garb, in an open field.

(3) A native in Mohammedan dress (which is common everywhere in Northern Nigeria), sitting on a table on which stands a native clay lamp.

(4) An oasis in the desert, showing a camel in front of a date-palm and two Arabs. (This was a rather dark and indistinct picture.)

(5) A mosque with a huge crowd of people in front. (A clear but somewhat complicated picture.)

(6) A bush fire (dark, very indistinct, in some respects corresponding to the familiar 'ink-blot' picture).

(1) *The background of experience*

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A first difference in the reaction of the two groups is due to the fact that in the description or interpretation of certain features in the pictures the different background of knowledge and practical experience characteristic of each group comes into play. Although the general cultural background of the two groups is the same, there exist naturally certain specific details of culture which are different in the two groups, and which to a certain extent enter into the description of the pictures. Thus quite a number of Yoruba called the clay lamp in the third picture a 'pump'. This

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rather surprising interpretation became clear in the explanation which one Yoruba gave; he described the object as a "clay lamp with a handle like the pump at the railway station". Ilorin, where the Yoruba experiments were made, is on the railway; the place where the Nupe experiments were made is not, and this explains why this particular interpretation occurred only among one group. Among the Nupe we have, instead of the 'pump', a 'bicycle wheel', or the 'handle of a motor-car'. Both Nupe and Yoruba seem to derive satisfaction from bringing in these very special, and up-to-date *motifs* of interpretation. The *motifs* contributed by this specialized knowledge tend, however, to disappear in the second recall and to be replaced by an interpretation of a more general character. For instance, there were 6 'pumps' in the first description but only 3 in the recall: one 'pump' was replaced by the ordinary 'clay lamp', one was left out altogether, and one reappeared in the following disguise: "a man kneels down (obviously for prayer) under a tree which bends down like the arm of a water-pump."

But the real, psychologically relevant, difference between the two groups does not lie in the different material or content of experience which is utilized in the description, but in the different psychological organization of this material. Among the Yoruba, to start with, the details contributed by special knowledge serve as centres for an interpretation which endeavours to lend a unitary and consistent *meaning* to the whole picture. A few examples will explain what I mean.

(Y 3) An old man wearing turban and white gown, kneeling near something that looks like a pump which has a hole and is bent. The man is repairing the bottom of the pump.

(Y 6) A blind man, wearing a turban and big white gown, pumps water from a fountain in order to drink it.

In the recall we may find a more or less complete reinterpretation: the first example brings the tree which looks like a pump, and the second gains completely new shape:

(Y 6) A Mohammedan teacher, wearing white turban, sits and lights a lamp in front of him, he places it on his right-hand side (obviously in order to read).

We see that, although there are changes from description to recall, the factor of consistent meaning still determines the interpretation. Now among the Nupe there is surprisingly little of such attempts to read a meaning into the picture.

(N 2) A man is kneeling, he wears a beautiful white turban, his eyes are closed. There is something in front of him which looks like the handle of a motor-car.

(N 12) There is an old man who has only one eye. He is sitting and doing something with a bicycle wheel.

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Certain attempts at a consistent, unitary meaning, do exist also among the Nupe. For instance:

(N 3) A man with a waterjug, he is holding it and making his ablutions in a hut.
(N 10) A man with a white turban is sitting, his forehead bent, worshipping an idol.

But these meaning-oriented interpretations are (1) in the minority; (2) the consistency is not established really fully and satisfactorily: e.g. the 'man in turban' would be a Mohammedan; still he is said to worship an idol; (3) the meaning evaporates in the recall. Here are the reproductions of the two meaning-oriented Nupe descriptions which I have just quoted:

(N 3) A man sitting in a beautiful room, with a big water-jug, he is crouching.
(N 10) A man with white turban is sitting, he is crouching, he is watching something in front of him which looks like a motor-part.

(2) *Imagination*

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From the examples quoted above it will be seen that the positive or negative part which the meaning factor plays is not correlated with predominance or lack of imaginary addition. Quantitatively, the contribution of imagination is the same in either group. The difference lies again in the part which imaginary details or additions play in the organization of the material. Among the Nupe they just constitute additional items and there is no tendency to weld all the details into a unitary interpretation. Thus, in the picture of the horse and the groom:

(N 13) There is a European horse standing together with a European near a small hill (!)[1] A few men stand behind the European (!), they look like soldiers and are coming towards him.

Among the Yoruba such mere addition is the exception. The rule is represented in the following example:

(Y 13) A horse near a river (!). It looks as if it is going to be washed. It has a bridle in its mouth, and the man who brings it to the river stands with the horse, he does not hold it but only looks at the horse.

In the recall the orientation towards meaning is intensified by introducing still another imaginary detail:

(Y 13) A man taking a horse to the stream. He stands there trying to pull the horse by the rope (!), but the horse does not move away from the stream. The man is watching the horse.

(3) *Meaning-oriented response*

The essential difference in the psychological responses of the two

[1] Exclamation marks indicate imaginary additions.

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groups lies then in this: the Yoruba are meaning-oriented; they weave into most of their descriptions and recalls a unitary meaning; the Nupe tend to present the facts which they notice or remember in a purely enumerative manner. Now, *meaning* is, generally speaking, a recognition of relation, more particularly of a relation bearing on purpose and causality. In the picture of the horse, for example, only 6 Nupe descriptions and 3 recalls (against 15 Yoruba) attempt to establish the simplest relation on which a unitary meaning could be based, namely a relation which accounts for the presence of the two figures in the picture, the horse and the man; i.e. describes them as a horse and its master, or a horse and its groom, etc. Or, in the picture of the two leopards: 10 Yoruba read a meaning into the picture, i.e., place the data in an explanatory relational context, and describe the two animals as waiting for their prey, as playing together, or as cohabiting. Only 2 Nupe descriptions (1 recall) try a similar solution.

Cognition of meaning and relation in this sense may, however, refer not only to figures and events presented in the picture, but to the picture itself *qua* picture. Some of the Yoruba approach their task in this fashion, and attempt to relate the picture as an item in itself to other facts of knowledge and experience. They try, for example, to explain the fact that such and such a picture had been shown; they understand the picture in the sense of their school-book illustrations, i.e. as an invitation to relate, in the manner of a school examination, everything they know about one or the other item illustrated in the picture. Thus in the picture of the horse and groom:

(Y 9) The horse is an animal that lives with us people. We supply it with grass for food, and we ride it for pleasure or something else. We use it as a pack animal, and also for farming. We harness it.

In other cases, the Yoruba seem to be struck by certain peculiar features in the composition of the picture, and try to explain them, by quite an elaborate process of reasoning, as a result of the formal arrangement:

(Y 20) There is a camel with big loads on his back. He stands near a palm-tree. If one does not look carefully one may think he has no head. But he has one. He lifts his head up to the palm, so that the head is level with the palm-tree. That is the reason why we see only the palm-tree. There is a man close to his hind-leg, he is squatting, and there is a man standing in front. These men are men from the East, because you can see they cover their heads with a cloth.

This attitude of explaining and reasoning which deals with the picture as an object in its own right is completely absent among the Nupe.

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(4) *Exactness*

The examples will have revealed already that the cognition of meaning does not correspond in any way to exactness of perception or memory in the sense of fidelity to the original. Among the Yoruba the proportion of meaning-oriented interpretations increases from description to recall, among the Nupe it decreases. That means the recall emphasizes still further the type of interpretation manifest in the description. But the main point here is that imaginary additions also increase and decrease in the same proportion. The recall of the Yoruba is therefore, from this point of view, less exact than the recall of the Nupe. The enumerative type of perception and memory on the other hand is less exact in other ways. The Nupe frequently confuse the pictures in their memory and reproduce in the recall descriptions in which the features of two pictures appear combined. This combination is never an improvement from the point of view of consistency of meaning. There is no evidence for this fusion of memory pictures among the Yoruba. The Nupe also forget pictures completely much more frequently than the Yoruba. The first picture was left out by 1 Yoruba and 4 Nupe, the second by 1 Nupe only, the third by 2 Nupe only, the fourth by 1 Yoruba and 7 Nupe, the fifth by none in either group, the sixth by 1 Yoruba and 2 Nupe. The most interesting figure is the one referring to the fourth picture (the oasis) in which Nupe 'forgetfulness' reaches its maximum. For both groups, however, this picture represents a maximum also of meaning-oriented interpretation. This, I think, stresses an important point with respect to the evaluation of these results. It shows that we cannot simply say that meaning-oriented interpretation assists, or lessens, memory. For the meaning-oriented type of memory, meaning-oriented organization of the psychological material assists memory; for the enumerative type, into which it does not fit, meaning-oriented organization of the psychological material constitutes an obstacle to remembering. In short, the situation proves the impossibility of any simple comparative evaluation of the two types of psychological response in accordance with a common scale of exactness and, accordingly, of intellectual efficiency.

(5) *Enumerative response*

What I called the 'enumerative' response type does not, however, represent a reaction devoid of all unitary organization or integration. It is enumerative only with respect to the meaning read into, or found in, the contents of the pictures. But there exist other aspects of organization

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VII. SUMMARY

1. The aim of this investigation was to study, by means of the psychological field experiment, the correlation between diversity of culture and psychological differentiation.

2. Two primitive groups were studied, two tribes in Northern Nigeria which, living under similar conditions, yet show marked differences in their culture.

3. The experiments were carried out with school boys of the age of 15–18. The selection of the subjects, however, insured that the experimental groups were representative of the culture at large.

4. The experiments examined the repeated reproduction of a narrative, and the description and remembering of a number of pictures. Both the narrative and the pictures represented a material with which the experimental subjects were thoroughly familiar.

5. The results show a marked difference in the responses of the two groups. In the story experiment one tribe laid stress on logical and rational elements while the other showed distinct appreciation of situational facts and connexions of time and place. In the picture experiment the response of the first group was meaning-oriented, the response of the second enumerative and appreciative of spatial arrangement.

6. Between the cultural differentiation and the psychological differentiation there exists close correspondence. The dualism of culture and psychological responses is incidental; the investigation reveals in fact three different psychological 'types' distributed in different proportion among the two groups.

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